RJ45B Module Installation Guide

ASANTÉ

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Asanté Technologies, Inc. warrants that the Asanté NetStacker RJ45B Module will be free from defects in title, materials and manufacturing workmanship for a period of one (1) year from the date of purchase. If the NetStacker RJ45B Module is found to be defective, then, as your sole remedy and as the manufacturer's only obligation, Asanté Technologies, Inc. will repair or replace the product (see "Asking for Assistance" for information on how to contact us). This warranty is exclusive and is limited to the Asanté NetStacker RJ45B Module.

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Δ Note: The warranty card must be filed with Asanté Technologies, Inc. within 30 days after date of purchase.

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Preface

- **About this Manual on page xii**
- **What Typographic Changes and Symbols Mean on page xiii**

About this Manual

This Installation Guide for the RJ45B Module is part of a set of four installation guides which you will use when you install the NetStacker Hub.

The three additional guides you will find useful when installing the hub are

- NetStacker Hub Installation Guide
- Asanté RJ21B Module Installation Guide
- Asanté NetStacker NMM Lite Installation Guide

The NMM Lite daughter board is designed specifically for the NetStacker Hub.

Related Documentation

You can install other Asanté modules in the NetStacker Hub.

For information about these products, refer to the appropriate installation guide.

What Typographic Changes and Symbols Mean

Sometimes it is necessary to give a special meaning or significance to the information in the manual. We do this by displaying a different typeface and often by presenting the text in a different format. Here are examples of the special typefaces and formats used in this manual. We suggest that you become familiar with them here before going on to the rest of the manual.

This kind of bolded text is used when special emphasis is necessary.

When certain information is noteworthy or unusual, it is set off in a special format:

Δ Note: This information is noteworthy or unusual.

When information is **especially** important, it is set off with this format:

▲ **Important:** This information is very important.

The following table describes the type changes and symbols used in this guide.

Typeface or Symbol	Meaning	Example
AaBbCc123	The names of commands, parameters, and directories; on-screen computer output	Use *dir* to list all parameters.
AaBbCc123	What you type, contrasted with on-screen computer output	*Login:* **su** *PassWord:*
AaBbCc123	Command-line placeholder: replace with a real name or value	To set baud rate, type: *set baudrate=38400*
[AaBbCc123]	Commands in brackets denote a key to press	*Login*: **su** [Return]

Procedures and Instructions

Many times, the manual provides specific instructions about how to perform a task or configure an application. Where you must perform certain steps in a certain order, the manual provides a formal procedure.

All procedures in the manual are made to look different from the regular text to make them easily recognizable and simple to follow.

---

1 Read this first step in this procedure. Be sure to follow all following steps as well.

If any step in the procedure requires an explanation, the information will follow the instruction, as shown here.

2 Now read this step in the procedure.

3 And finally, read this step in the procedure.

4 The last step in any procedure has a line drawn underneath it, showing the end of the procedure.

This way, you will always know where a procedure starts and stops.

Asking for Assistance

Asanté Technical Support

To contact Asanté Technical Support:

Telephone	(800) 622-7464 (408) 435-0706
Fax	(408) 432-6018
Fax-Back*	(800) 741-8607 (408) 954-8607
Bulletin Board Service (BBS)	(408) 432-1416
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FTP Archive	ftp.asante.com
Internet mail‡	support@asante.com

* Please request catalog of contents.
† Download INDEX.TXT file for catalog of contents.
‡ When sending email, please include your full name, US mailing address, phone number, product name and a description of the problem.

Technical Support Hours

6:00 AM to 6:00 PM Pacific Standard Time USA, Monday–Friday

Tell Us What You Think

There's always room for improvement and Asanté Technologies is interested in your comments and suggestions about our product user manuals. If you take the time to make suggestions, we will take the time to read and consider your suggestions for new manual releases.

Please read through this manual and think about these questions:

- ❏ What do you like best about this manual?
- ❏ What do you think is the least valuable or weakest part of this manual?
- ❏ What is the most needed improvement you would make to this manual?

Fax your comments and suggestions to:

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Asanté RJ45B Module Installation Guide

- Introducing the RJ45B Module on page 2
- Installing the RJ45B Module on page 3
- The Front Panel on page 7
- The Back Panel on page 8
- Connecting Other Devices on page 9
- Technical Specifications on page 12

Introducing the RJ45B Module

The Asanté RJ45B Module is a 24-port, double-height repeater that plugs into the Asanté NetStacker chassis or the AsantéHub 2072 chassis. It is specially designed to accommodate the Asanté NetStacker NMM Lite daughter board which provides the intelligence for the hub. (The RJ45 Module does not accommodate a daughter board.)

Thus, one NetStacker Hub, with an RJ45B board and a mounted NMM Lite daughter board, provides network management capability in addition to 24-node connectivity. A stack of three NetStacker hubs requires one NMM Lite daughter board for network management capability.

This module has its own built-in retiming unit which enables it to continue functioning when another module malfunctions in the NetStacker stack or the AsantéHub 2072.

RJ45B Module Features

The RJ45B Module has the following features:

- ❏ 24 RJ45 connectors
- ❏ Two AUI connectors; one is recessed to accommodate an Asanté Mini MAU for Thin, Twisted-Pair or Fiber connectivity
- ❏ Hot-swap capability
- ❏ Partition and Link/Receive LEDs that display port statistics for each port
- ❏ Full compliance with IEEE 802.3 Ethernet specifications for 10BaseT

Figure 1 below shows an RJ45B Module installed in a NetStacker Chassis, with an Asanté Mini MAU for 10BaseF connected to the recessed AUI connector.

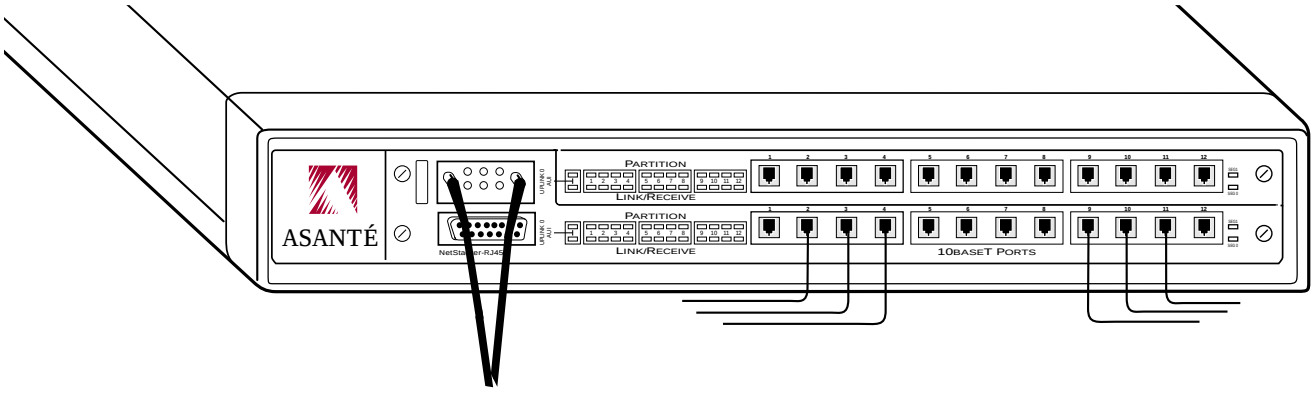

Figure 1 The Asanté RJ45B Module

You manage the RJ45B Module from a network management station using AsantéView Lite In-Band and/or Out-of-Band (or AsantéView). All 24 ports on the RJ45B Module are on Segment 1 and cannot be switched to Segment 2. For segment switching capability in a NetStacker stack, use the full-size AH2072 NMM.

Installing the RJ45B Module

To install the RJ45B Module, you will perform the following operations:

- ❏ Ground yourself
- ❏ Check the package contents
- ❏ Install the module and check the LEDs
- ❏ Connect the module to other devices

Instructions for installing a recessed Asanté Mini MAU are included.

If you are using an NMM Lite daughter board, you must install the daughter board before you install the RJ45B module in the NetStacker chassis. Refer to the NMM Lite Installation Guide for instructions.

Grounding Yourself

Before you unpack or handle the module, you must attach the provided grounding strap to your wrist and then touch the mount rack or a piece of metal to discharge static electricity from your body or clothes. Make sure the chassis is already grounded.

Checking Package Contents

The Asanté RJ45B package contains the following items:

- ❏ Asanté RJ45B Module in antistatic packaging
- ❏ Installation guide (this manual)
- ❏ Warranty card

Required Tool

We recommend you use a #1 slot screwdriver to tighten the module to the chassis. You can also hand-tighten the module.

Installing a Recessed Mini MAU

If you plan to use an Asanté recessed Mini MAU, you need to connect it to the recessed AUI connector before you install the module.

To install a recessed Asanté Mini MAU:

1. Unscrew the two ejector screws on each side of the module's front panel and pull out the module approximately four to five inches from the chassis. See Figure 2.

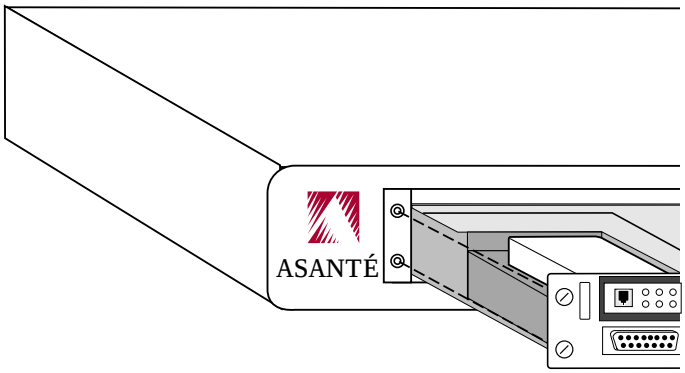

Figure 2 The Mini MAU filler plate in the RJ45B Module

2. Remove the Mini MAU's filler plate.

3. Insert the Mini MAU by guiding it into the recessed slot until it is securely fastened to its connector.

4. Reinsert the module into the chassis.

Installing the NMM Lite on the RJ45B Module

If you plan to mount an NMM Lite daughter board on the RJ45B mother board, you must do this before you install the RJ45B board.

For instructions on how to install the NMM Lite daughter board, on the RJ45B mother board, refer to the NMM Lite Installation Guide.

Figure 3 shows an NMM Lite daughter board installed on an RJ45B mother board.

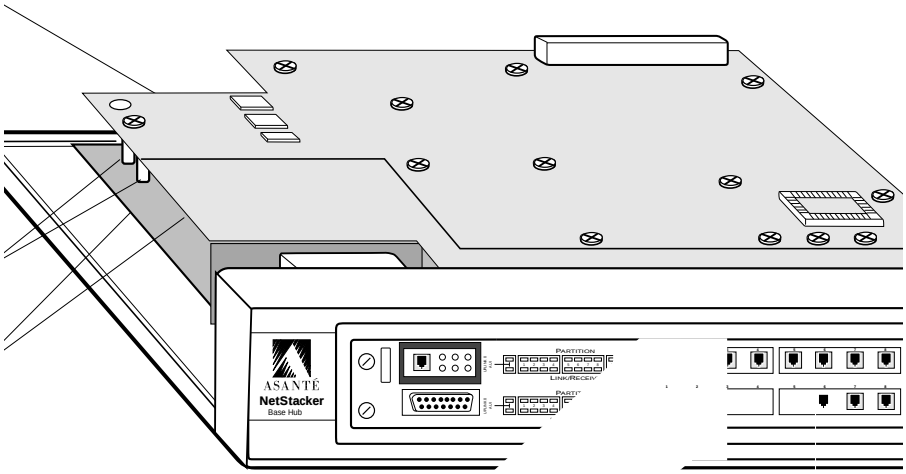

Figure 3 The NMM Lite daughter board installed on RJ45B mother board

Installing the RJ45B Module

The NetStacker or AsantéHub 2072 chassis should be installed before you can install the RJ45B Module.

To install the RJ45B Module:

1 Remove the module from its antistatic packing, taking care to observe proper antistatic procedures.

Δ Note: Handle the module only by its edges. Do not touch the chips or connectors.

2 Align the module to the edges of the card guides on the slots in the chassis. Gently slide the module in until you can begin tightening the screws. See Figure 4.

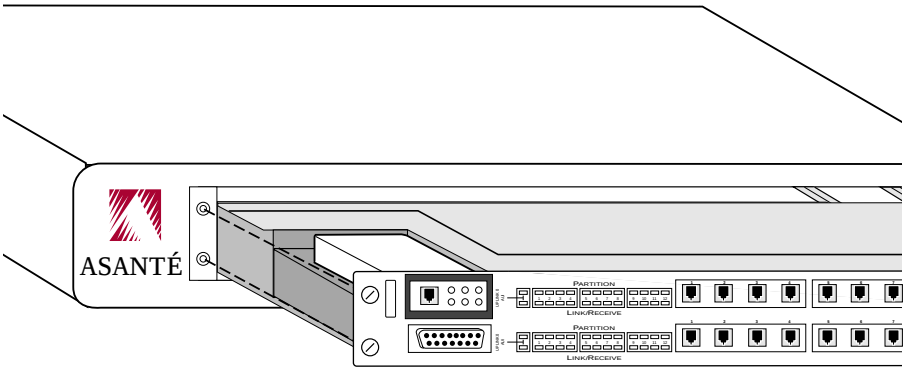

Figure 4 Installing the RJ45B Module

3 Tighten the module to the chassis by hand or use a #1 slot screwdriver, fastening the screws in unison and using the same amount of force to attach the module evenly to the chassis.

4 Turn on the power on the hub.

The SEG1 LED lights indicating the module is properly connected to network Segment 1.

5 When you connect a node to the hub using UTP cable, the Link/Receive LED on the used port turns green, indicating a link is established between the node and the hub.

The Front Panel

The RJ45B Module front panel displays the following connectors and LEDs:

- Two AUI connectors
- 24 RJ45 connectors
- AUI Uplink LEDs
- 24 Partition LEDs
- 24 Link/Receive LEDs
- Segment LEDs (1 and 2)

Figure 5 shows the RJ45B Module front panel.

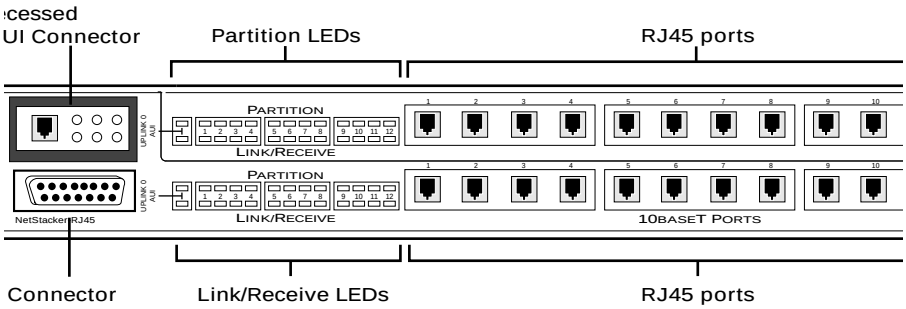

Figure 5 The RJ45B Module front panel

Table 1 identifies the RJ45B Module connectors and LEDs and their respective functions.

Table 1 RJ45B Module Connector and LED Functions

Name	Function
AUI connector Recessed slot	Serves as uplink port to network backbone. Functions as compartment for housing recessed Mini MAU.
RJ45 connectors	24 ports; each can be connected to Ethernet device, including another hub for daisy chaining.
AUI Uplink LED	If active MAU is attached, this LED remains lit, indicating link exists and is enabled
Partition LEDs	24 LEDs, indicating partitioned ports.
Link/Receive LEDs	24 LEDs, when lit, indicate link connection; when blinking, indicate packets received on port.
Segment 1 LED Segment 2 LED	With NMM Lite daughter board mounted, Segment 1 LED is lit; with AH2072 NMM board, either Segment 1 or Segment 2 LED is lit identifying segment to which module is connected. Neither segment LED is lit if module is not connected to segment. Note, even when module is not connected to segment, repeater still functions.

Interpreting the LEDs

The RJ45B Module front panel LEDs fall into four categories:

- ❏ AUI port link and partition
- ❏ Port-by-port partition LEDs
- ❏ Port-by-port link/receive LEDs
- ❏ Segment 1 configuration LED

Table 2 RJ45B Module LEDs

LED	Color/State	Meaning
AUI Uplink PARTITION LED	Amber On, Blinking	Hub has autopartitioned uplink; high collision rate possible.
	Amber On, Steady	Operator has manually partitioned uplink or trap has been sent.
	Off	Uplink not partitioned.
AUI Uplink LINK LED	Green On, Blinking	Blinking LED indicates hub is receiving traffic over uplink. Faster rate of blinking indicates greater traffic.
	Green On, Steady	No traffic over uplink, or link integrity is disable
PARTITION 24 LEDs	Amber On, Blinking	Autopartitioning.
	Amber On, Steady	Slot has been manually partitioned by administrator or trap.
	Off	Normal port operation.
LINK/ RECEIVE 24 LEDs	Green On, Blinking	Blinking LED indicates hub is receiving traffic over port.
	Green On, Steady	Link present or link integrity test disabled.
	Off	Link not present. Port status unavailable if link integrity test disabled.
SEG1 and SEG2 2 LEDs	Green On, Steady	With an NMM Lite, SEG1 is lit; with an AH2072 NMM SEG1 or SEG2 is lit.
	Off	Board not seated properly or both LEDs intentionally set off by operator. Though module may not be connected to network segment, it still functions as repeater.

The Back Panel

If you mount a Network Management Module Lite (NMM Lite) daughter board on the RJ45B mother board, the NMM Lite back panel appears. For information about the back panel, refer to the Asanté NetStacker NMM Lite Installation Guide.

Connecting Other Devices

The RJ45B Module provides two types of connectors for attaching devices:

- ❏ AUI connectors for connecting to the backbone and to other hubs. One of the connectors accommodates a recessed Mini MAU.
- ❏ RJ45 connectors (24 10BaseT ports) for attaching to network devices

Connecting to the Backbone Using the AUI Port

You have two AUI connectors on the front panel—a recessed and a non-recessed connector. The recessed AUI connector is designed to accommodate an Asanté Mini MAU.

To connect the hub to the backbone, use one of the AUI connectors. Use a MAU if your backbone is Thin, Fiber, or Twisted-Pair.

Δ Note: Make sure SQE (Signal Quality Error) is disabled on the MAU when it is attached to the AUI connector.

In Figure 6, the hub is connected to a Fiber backbone using an Asanté 10BaseF Mini MAU in the recessed AUI connector.

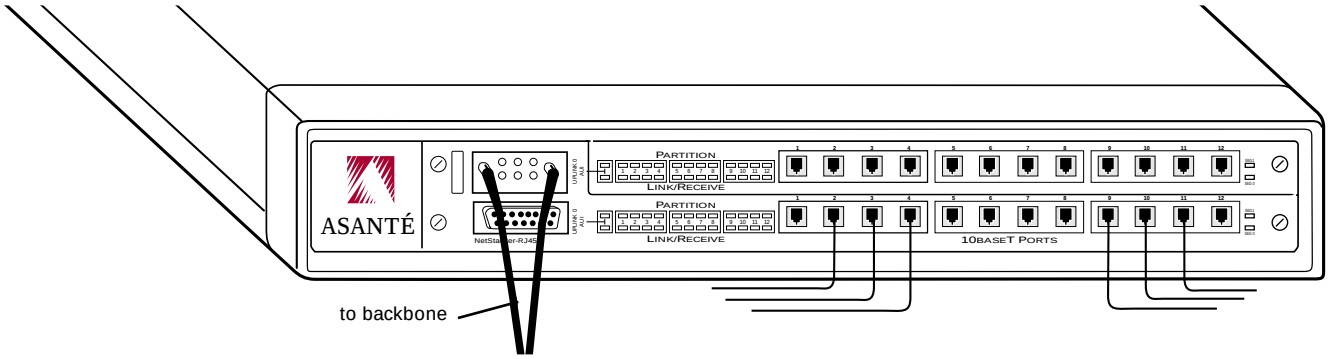

Figure 6 Using the recessed AUI connector

Interconnecting Hubs Using the AUI Port

You can interconnect hubs using the AUI Uplink port located on the module's front panel. Use the appropriate MAU for your backbone.

- Asanté provides an RJ45B, BNC, and 10BaseF Mini MAU to accommodate your backbone cabling scheme.

To interconnect hubs using the AUI Uplink port

1. Attach the appropriate MAU (if you are not using thick Ethernet) to the AUI port on of the first hub.
2. Attach the Ethernet cable.
3. Attach a MAU to the AUI port on the second hub.

   Figure 7 shows a 24-port RJ45B Module in the first hub connected to a AsantéHub 2072 RJ45 Module in the second hub. A recessed Asanté BNC Mini MAU connects the hub to the BNC backbone.

   - Note: Make sure the MAU SQE (Signal Quality Error) is disabled when the MAU is attached to the AUI port.

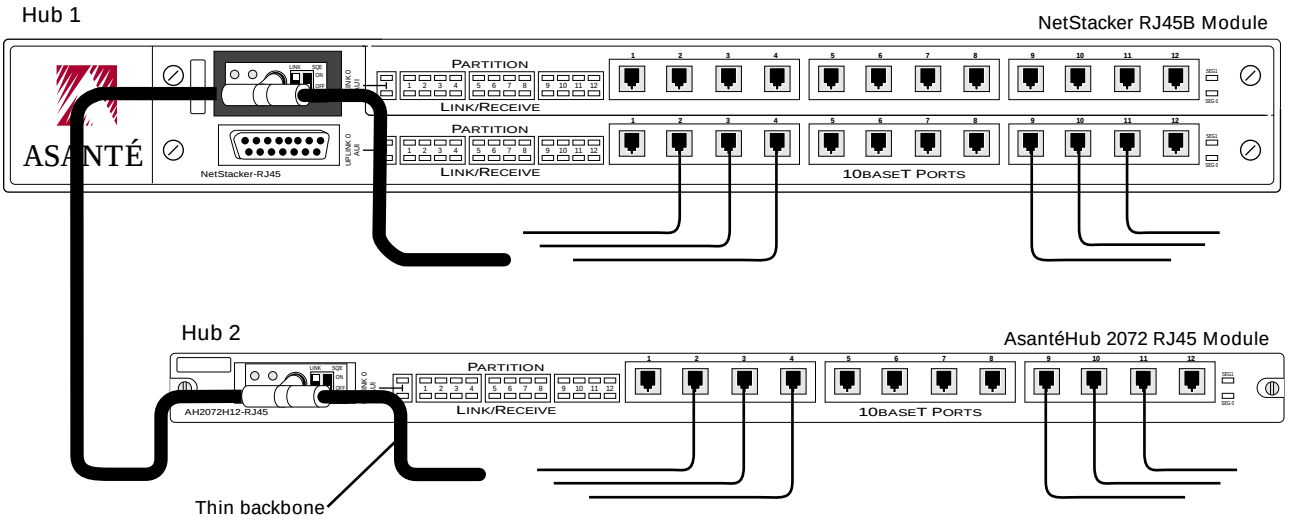

Figure 7 Using the AUI port to interconnect hubs

Connecting a Management Station Using an RJ45 Connector

To connect the NetStacker Hub to an Asanté Management Station (PC or Mac) for In-Band management:

Connect an RJ45 connector on the front panel to an RJ45 port on an Ethernet interface attached to the PC or Macintosh.

See Figure 8.

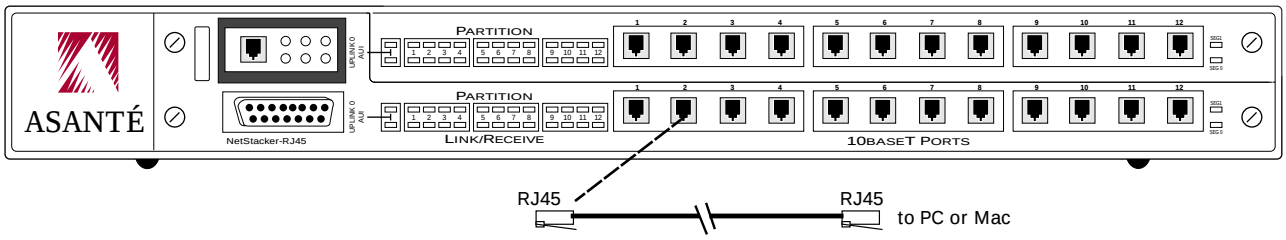

Figure 8 Connecting an AMS using an RJ45 connector

Δ Note: To manage an RJ45B Module, when using an NMM Lite daughter board, the AMS (running AsantéView Lite In-Band) must be on the same segment as the RJ45B Module, namely Segment 1.

Technical Specifications

This section contains technical specification dealing with:

- RJ45B Module Technical Specifications
- Out-of-Band Data Specifications
- Pin-Outs and Cable Specifications

RJ45B Module Technical Specifications

The technical specifications for the RJ45B Module are:

Standards Supported

IEEE 802.3 Ethernet specifications for 10BaseT (UTP) media

Data Rate

10 Mbps

Maximum Cable Distance

10BaseT (UTP) -- 100m (328 ft.)

Safety

Designed in accordance with UL, CSA, TUV/IEC requirements

Physical Dimensions

17" x 1.8" x 12"

Weight

Approximately 4 lbs.

Environmental

- Operating Temperature: 0° to 40° C ambient
- Operating Humidity: 5 to 85% noncondensing
- Operating Altitude: 10,000 ft. (3,048m) maximum
- Storage Temperature: -30° to 80° C
- Storage Humidity: 5 to 90% noncondensing
- Storage Altitude: 25,000 ft. (7,620m) maximum

Out-of-Band Data Specifications

This section contains specification for:

- ❏ RS232 Connections
- ❏ Out-of-Band Cable Limitations

RS232 Connections

Table 4, RS232 Port Interface Pin Assignments lists the pin assignments for a standard RS232 connector.

Table 3 RS232 Port Interface Pin Assignments

Pin	Function
1	Protective ground
2	Transmit data
3	Receive data
4	Request to send
5	Clear to send
6	Data set ready
7	Signal ground
8	Carrier detect
20	Data terminal ready
22	Ring indicator

Out-of-Band Cable Limitations

The AMS link can not be more than 2000 feet between first and last device (including the network management station) in the chain.

Pin-Outs and Cable Specifications

This section defines the pin-out assignments and cable specifications for:

- ❏ RJ45B modular jack to wall jack pin-outs
- ❏ RJ45B to RJ45B crossover cables
- ❏ AUI DB15 pin-outs

RJ45B Modular Jack to Wall Jack Pin-Outs

The pin numbers shown in Figure 7 are for an Asanté 10BaseT card or MAU positioned correctly with the notch on the 8-pin modular jack down. Pin 1 is the left-most pin, and Pin 8 is the right-most pin. See Figure 7.

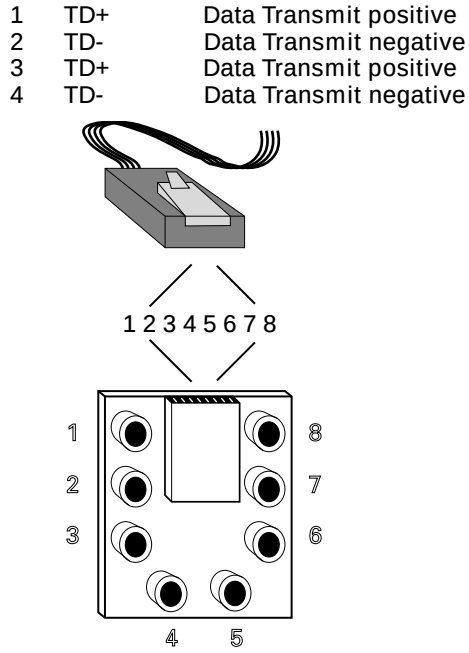

Figure 9 RJ45B wall jack to modular jack pin-outs

RJ45B to RJ45B Crossover Cable

Figure 8 shows the RJ45B to RJ45B crossover cable.

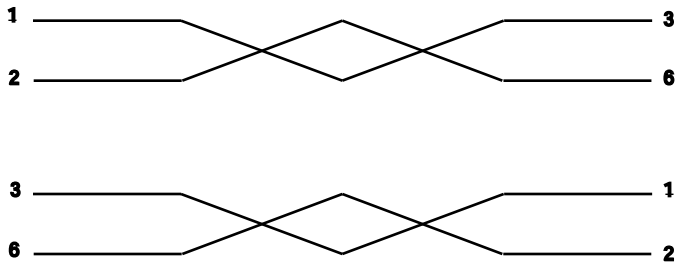

Figure 10 RJ45B crossover cable

Δ Note: This manual assumes that straight-through cabling is used for all configurations, except where specifically noted.

AUI (DB15) Pin-Outs

Table 3 lists the pin numbers, circuit and signal names for the AUI connector.

Table 4 AUI Connector Pin-Outs

Pin	Circuit	Signal Name
03	DO+	Data Out positive
10	DO-	Data Out negative
11	DO S	Data Out circuit Shield
05	DI+	Data In circuit positive
12	DI-	Data In circuit negative
04	DI S	Data In circuit Shield
07	CO+	Control Out positive (optional)
15	CO-	Control Out negative (optional)
08	CO S	Control Out Shield (optional)
02	CI+	Control In positive
09	CI-	Control In negative
01	CI S	Control In Shield
06	VC	Voltage Common
13	VP	Voltage Plus
14	VS	Voltage Shield
Shell	PG	Protective Ground

In-Band Cable Limitations

Table 4 lists the IEEE standards used to determine how networks should be configured when using coaxial cable connections.

Table 5 IEEE Standards for Coaxial Cable Connections

	10Base5 Ethernet (Thick)	**10Base2 Thin Coax (Standard)**	**10BaseT**
Data rate	10 Mbits	10 Mbits	10 Mbits
Cable length per trunk segment	500m	185m	100m
Nodes per trunk segment	100	30	1
Min. distance between nodes	2.5m	.5m	n/a
Max. number of trunk segments	5	3 (+ 2 repeater only)	n/a
Max. network trunk length	2500m	925m	n/a
Cable type	double shield 0.4” coax	single shield 0.2” coax	solid conductor
Transceiver type	external with drop cable	recessed or external	n/a
Connector	clamp-on	BNC	RJ45B

Δ Note: Extended length networks **cannot** contain any repeater-only segments.